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Diphtheria Antitoxin.

The use of the new remedy is progressing, and various sources of supply are being opened up in this country. In a letter to *The Times*, Sir Joseph Lister, writing as chairman of the Council of the British Institute of Preventive Medicine, says—

"Great progress has already been made, and when the unavoidable delay caused by the time required for bringing the serum up to the due degree of efficacy shall have expired there will be no need to fear that the supply may run short. The Council have determined that no profit shall be made from the sale of the antitoxine, but that it shall be issued at cost price."

The Institute has for some time had a number of horses in London, but now they have a large stable in the suburbs and the preparation is being cultivated on a large scale. It is satisfactory to know that the veterinary profession is represented in this wonderful new departure in therapeutics. A son of the late Professor Robertson, who was some time since appointed veterinary surgeon to the Institute, has charge of the horses; and Dr. Ruffer told an audience of veterinarians at the annual dinner of the Central V.M.S., that in the preparation of antitoxine "Mr. Robertson had done quite as much as he had."

At the Royal Veterinary College, too, efforts are being made to produce a supply of antitoxine, and Professor McFadyean has a letter in *The Times* contemporaneous with that of Sir Joseph Lister, in which he says—

"It may be of public interest to state that a number of horses are now being subjected here to the course of treatment necessary to render them immune. It is hoped that a large quantity of the antitoxic serum will be available in about two months, and, should further experience fully establish the efficacy of this remedy, the resources of this institution will be equal to the purveying of sufficient serum for all the cases of diphtheria occurring in London. It is intended to supply the serum at the bare cost of production, which will probably not exceed 2s. for the quantity necessary, according to French experience, for the successful treatment of one child."

Dr. Klein is also at work at the Brown Institution and Dr. Sims Woodhead, the director of the Joint Laboratories of the Royal College of Physicians and Surgeons, will also soon be similarly employed. The Goldsmiths Company of the City of London has liberally offered a grant of £1000 to the Joint Laboratories for the purpose of prosecuting research work in connection with the antitoxine treatment.

After all this country will not be far behind the State aided institutions of Europe—and entirely by voluntary effort.

There is a curious rumour from Germany that some of the horses there have been rendered useless owing to an outbreak of glanders amongst them. It is probable that if serum were taken from a badly glandered horse and injected into the human subject very grave consequences might result. Such a possibility would be almost a bar to the adoption of serum from horses as a therapeutic agent, but fortunately mallein steps in and renders such an accident impossible. Some few horses have reacted to mallein in which no glanders lesions have been found on post-mortem examination, but no glandered horse in this country has ever failed to react to mallein. By testing every horse before commencing the immunising injections we may be certain that the animal is a safe subject for serum production. And yet there are men to be found who are so blinded by prejudice as to object to so-called vivisection!

If Pasteur had not demonstrated the impossibility of spontaneous generation; if other workers had not separated and identified the causal organisms of contagious diseases; if Koch had not discovered tuberculine; if no work had been done on living animals to show the life and action of bacteria; we should have been still in the dark ages of medicine. Instead of this we are approaching the light, and bacteriology is giving us not only knowledge as to the cause of disease but valuable aid in its treatment. We are distinctly progressing—not blindly as of old, but by chart and compass. We are leaving empiricism, and medicine is becoming a science.

Justifiable Cruelty?

"The steam ship ——— met with very rough weather and no less than 1000 animals, sheep, and bullocks were killed, or so seriously injured as to render it necessary to throw them overboard." Such is a paragraph not uncommonly seen in the daily papers during the winter months. What does it mean? Imagine the lower decks of a ship in rough weather filled with sheep in pens and bullocks tied up in rows. As the floor on which they stand departs from the horizontal and approaches the vertical these miserable animals break loose or are forced from their stands and hurled to the lower side of the deck. Broken limbs, and backs, and ribs are the result. As the vessel lurches back to the opposite angle every maimed animal in thrown back to the other side of the ship. The horns, when not knocked off against the iron bars and sides, penetrate the bodies of the other beasts; and so this awful scene goes on for hours. Imagination revolts at the spectacle of these living animals, boxed up in the 'tween-decks of a ship, being thrown about like dice in a box till life is knocked out of them. Men who have seen it say that the sight after 24 hours of rough weather is too sickening to describe. Food and water of course cannot be given. No man dare enter the place where poor beasts weighing half-a-ton are thrown in all directions, and where blood and flesh and entrails soon cover the whole interior. This is justifiable cruelty! but to inject a guinea-pig with mallein is a criminal offence? Better to be the victim of Science than that of Mammon. One may plead utility, the other cannot. The shipping trade in live animals should be made a penal offence during the winter months. It is unnecessary and it is brutal.

CASES AND ARTICLES.

ANTHRAX IN CALVES.

By J. W. Pritchard, M.R.C.V.S., Brighton.

On Monday, October 22nd, I was requested to ascertain the cause of death of a five-months old shorthorn calf. This was one of six, their ages ranging from four to six months. When about two days old they were taken from their respective mothers and placed in an outbuilding which was used solely for weanyer calves. They had not been removed from the shed neither had any other animals been in contact with them. Up to a week previous they had been fed upon cotton cake, mangold tops, cabbages, hay, and occasionally some milk; then brewers' grains and oatmeal had been added to their diet. Upon enquiry of the stockman as to whether the calf had been ailing, he replied that when he saw it at 7 o'clock in the morning it appeared in perfect health, but at 2 o'clock in the afternoon he found the animal dead.

The post-mortem examination revealed congestion of the mucous membrane of the abomasum and a portion of the small intestine; the liver slightly enlarged; spleen and kidneys appeared perfectly normal, both lungs full of blood, but the heart practically empty. The blood coagulated readily upon exposure, and the schneiderian mucous membrane, conjunctivæ and anal mucous membrane presented no abnormal condition. I was of opinion that the animal had died in a fit, the result of the extra food, which of itself was of too stimulating a nature for calves, and I ordered a thorough change of diet.

On Thursday, 25th, I was informed that another calf had died suddenly in the afternoon. I arranged to open the carcase on the following afternoon. About one p.m. Friday, 26th, a message was sent saying that another calf had been taken ill, and I was requested to attend at once. The animal died ten minutes after my arrival, the symptoms it had presented being difficulty of breathing, flow of stringy saliva, champing of the jaws and tympanitis, with a temperature of 103.4dgs., but no bloody discharge from any of the excretory orifices, nor an emphysematous condition of the tissues beneath the skin on any part of the body, either in the calf that had just died or the one that had succumbed the previous afternoon.

I proceeded to make a post-mortem examination of the carcase No. 3; the same appearances were presented as in No. 1, with the exception of the blood, which was of a darker hue and coagulated tardily. The spleen of this animal appeared quite normal. I took some of the blood for microscopical investigation; upon staining with methyl. violet and examination I discovered the bacilli of anthrax, some of the rods actually contained spores. Information was, of course, at once given to the Local Authority and the necessary precautions were taken. Another calf died soon afterwards, the remaining two were destroyed, and all the carcases buried in accordance with requirements of the Board of Agriculture.

The remarkable features of the outbreak were:—The absence (excepting sudden death) of the macroscopical symptoms of anthrax, and of any trace how and where the animals became infected with the virus, as no previous case had been reported as occurring on the farm or its premises. The cotton cake appeared of good quality, has been for some considerable time and is still given to sheep and other young stock of the farms. The oatmeal was home produce and also the hay.

[What about the "grains"?—Ed.].

BRAIN TUMOURS.

By R. Porch, F.R.C.V.S.

With this I forward a brain showing a tumour in each lateral ventricle. The later symptoms were tolerably diagnostic of the lesions but some of the earlier are, I think, peculiar. It would be interesting to know what is the experience of other practitioners as to the relation, if any, between changes in the manners of horses and the formation of tumours on the brain.

The subject was a bay mare that had been in the service of the company between three and four years. She worked in an omnibus and was quiet in the stable and in harness. During the early part of 1893 she had some attacks of "staggers," but after a dose of aperient medicine resumed work. Throughout the hot summer of last year these attacks became more frequent and of longer duration, but after aperients, and on one occasion venesection, she resumed work. Throughout the autumn and winter, in fact for over twelve months she continued at work with only two or three slight attacks. She then developed a propensity to kick in the stable, but worked quietly in harness. So violent did the kicking become that it was difficult to keep her either in a box or stall; she would stand and kick for hours so long as there was any resisting body to kick, be it wall, or stall, or bail. These performances I never happened to see, but the evidences of her violence were all too apparent. During September and October a fresh symptom was observed, viz., standing in the stable with her head resting on the manger. This position would be maintained for hours; she stood quite quiet, apparently asleep. Her appetite was always good and the excretions normal.

At the end of October last I visited the yard about noon and found the mare lying in her stall in a semi-comatose state and sweating profusely. In a few minutes she staggered to her feet and commenced to push her head against the wall or manger or any firm substance against which she could exert pressure. She would rear and make struggling attempts to climb up the wall of the stable. Regaining her feet she would press forward, and if not stopped by a wall would rush forward over any obstacle. We had to remove the other horses from the stable, as she was quite uncontrollable and stumbled forward from one end of the stable to the other regardless of anything. This was varied by periods of quiescence brought on from sheer exhaustion. With difficulty

I gave a subcutaneous injection of morphia and atropine and left her for a while.

On my return in the evening she had broken out of the stable and got into the forge, where she had knocked over the anvil and every other movable object; I found her standing with her head up the bonnet of the forge. She died a few hours later, after alternate periods of violence and quietness.

A post-mortem examination disclosed the two tumours, which are still *in situ*. The rest of the organs were healthy. The two tumours are shown very well in the illustration; one is rather larger than the other. Neither is gritty on the surface.

WIRE IN COWS,

By G. Yates, (Pupil to W A. Hurrell, M.R.C.V.S.)
Southminster, Essex.

In December of last year we were called upon to attend two cows on a farm where about 70 are kept for dairying purposes. Their symptoms were those of acute indigestion, accompanied by abdominal pain, the rumen being inordinately full and tympanitic, resulting we presumed, from their being recently put on to dry food. We at once administered an aperient and followed up with stimulants and occasional doses of oil, and applied a stimulating embrocation over abdominal region. Mashes were allowed, with scalded oil cake, and other simple diet, but their appetites continued very precarious. Although the medicine relieved them to a certain extent they did not make satisfactory progress, the bowels did not respond to the aperients, but they had occasional scanty motions, and in spite of tonics and a liberal supply of good gruel daily, they appeared to become weaker, rapidly losing flesh, Their supply of milk diminished to a very small quantity. In this state they continued, sometimes appearing better and at other times quite unable to rise; there was moaning and anxious countenances. The pulse was frequent and weak, and temperature occasionally up to 104.4 F. The respirations became accelerated, with an occasional cough. On auscultation the action of the lungs became very dull, with a distinct dripping, as of water falling, producing a metallic sound. Corresponding with this externally a serous effusion appeared on the brisket, and sub-maxillary space. We then considered the sequel was Hydrothorax. The jugular veins became very much enlarged on each side of the neck, which persisted until death.

Post-mortem appearances revealed inflammation of the stomachs, which contained a quantity of wire, pieces of earthenware, etc. The thoracic cavity contained a quantity of straw-coloured fluid, the pericardium being abnormally thickened. In one animal a piece of wire was discovered about six inches long penetrating the diaphragm. Since then there has been five others, chiefly on the farm, presenting the same symptoms and same post-mortem appearances; in several the wire having penetrated the heart. In the rumen of another an iron staple was found. Previous to the cows becoming affected the stackyard had been renovated with hardcore, which contained a quantity of wire; the straw had been stacked on it and then cut into chaff. Some of the wire presented a jagged appearance where the knives had cut it.

VETERINARY SOCIETIES.

YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

"ON ANTHRAX."

By Professor PENBERTHY.

(Read before the meeting at Leeds on October 26th.)

It was in connection with this affection that the microbic character of the cause of such conditions was first demonstrated and perhaps of no other disease of our patients do we possess more positive knowledge than of anthrax. The light thrown on its intimate nature by scientific discovery affords one of the most brilliant examples of the benefits of experimental research to practical medicine, yet the work of each succeeding year seems to elucidate some fresh aspect and suggest the appropriation of some practical measure.

In 1849 Pollender discovered the bacillus anthracis in the blood. In 1850 Davaine found the organism, and in 1863 proved to general satisfaction, that it stood in relation to anthrax or charbon, as cause to effect. The work, based on the line of thought suggested by these discoveries, has been stupendous; a new era in pathology has been established, and though at the present moment medicine is in a state incident on revolution, the study of contagious disease is simplified, disease itself, especially as regards prevention, more under our control and guaged by the advances of the past 30 years there is ample room for hopeful work in the futere. New discovery and its relation to the health of man have given much prominence to the disease in question, and it has come to be considered by some a new disease. The history of anthrax, however, appears coincident with the earliest mention of animal diseases. Descriptions to be found in ancient records have little room for doubt as to its existence in the East in very early times. Many writers on this aspect of the subject are quite convinced that Moses has a claim to precedence as to mention of its contagious nature in Egypt, while, in *The Record* of the current year, we may read of claims for priority in Great Britain, which extended no further back than the year of grace 1873. It may be difficult to determine the position among the events of the past five or six thousand years which will be relegated to the respective chroniclers. The history of any contagious malady, which, like anthrax, appears to have an abiding influence in a definite area, is, I think, invested with a certain degree of importance and cannot be disregarded. There has been, I believe, a disposition to regard anthrax as something new to Great Britain, and from its apparent prevalence to day to draw the inference that it must be introduced from abroad. This naturally and rightly causes the expenditure of some of our energies in preventing its introduction from foreign countries. It is essential that we should not allow this to overshadow and minimise dangers which lie within our borders.

When we read that the contagiousness of such a disease was demonstrated in this country first, say 20 years ago, one inference is that the fact was not known before. There seems a tendency in the present day to believe that a demonstration of contagiousness, or the converse demands the experimental transference of the virus, and I fear this idea has done something towards obscuring the value of clinical research, and diminishing the record of clinical observation. To me, however, it seems impossible to read the older records, say *The Veterinarian* of 50 years ago, and the professional publications of to-day, without being struck with the usefulness of what is found in the former. I am fain to think we shall find that from an educational point of view, or as evidence of careful and correct observation the older compare favourably with the more recent.

In the Jubilee year it may not be unappropriate here to refer for information as to the disease now under consideration to *The Veterinarian* for 1844. On page 116 we find a chapter headed "Carbuncle, Malignant Pastule," by Dr. Muller, a surgeon of Homburg, who says: "For 22 years I have been practising in a district, where anthrax arising from the carbuncle in cattle, is of such frequent occurrence that the number of cases which I have treated exceeds 100. In the majority of my cases I have been able to trace the operation of direct infection, usually from the hands of the peasants, and from the contact of the blood of the diseased cattle during the process of skinning them, and in others from the pricks of gnats and other insects that had previously been settling on the dead carcases. Only once from a horse. On no occasion did it ever seem to be produced by the merely eating of the flesh of the diseased cattle."

In the same volume on page 532 there is an account of a singular mortality among cattle by Mr. J. Howell, V.S., of Wickwar, near Wootton-under-Edge. This gentleman describes how he visited a farm house, for the purpose of examining a dead cow with two neighbouring practitioners. The cow was supposed to have died of poison, two having died previously and five more being then ill. Mr. Howell then gives symptoms which are characteristic, and settles the matter for us by his account of the post-mortem: "On laying open the cavity of the abdomen, we observed a slight redness of the peritoneum and omentum; upon removing the intestines a quantity of bloody fluid was perceived in the cavity of the belly, of a very dark colour. The stomachs were perfectly healthy, as was also the liver. *The only abnormal appearance was an enlargement of the spleen which was four times its natural size, softened, and containing a quantity of very thick and dark coloured blood.*" Then follows another set of cases on an adjoining farm, where eight out of 14 cases had died suddenly within a very short space of time.

I have not quoted this as being the earliest evidence of the existence of anthrax in Great Britain. Up to this date and for some years succeeding it, the diseases of cattle had received very little enlightened attention. Practice amongst them was to a great extent engaged in by the most ignorant, and matters concerning them were in the early part of this century more obscure that we can even imagine now. Yet, if our profession were ignorant of the existence of such a malady as anthrax it was due to neglect of opportunities, for prior to the establishment of a veterinary school in Great Britain a good description of the disease was current in English literature.

The following I have extracted from "A Treatise on Cattle," with a direction for the proper treatment of them in their several disorders. To which is added a dissertation on their contagious diseases by John Mills, Esq., F.R.S., &c. &c., 1776," Describing a disease which was extremely prevalent in two parishes at the end of June, he says: "Cattle, sheep, swine, horses and even numbers of dogs which had eaten the flesh of diseased cattle, have died of this disease. The first symptom observed is in their abstaining from food. I do not mean to say no other symptoms precede this, but the keepers of the herds, little experienced in and as little attentive to, such objects do not distinguish them. The creatures are observed to be melancholy, to hang their heads, to have cold and drooping ears, rough hair without its usual lustre, loins feeble and beating, the whole body weakened, and seeming to be disposed to make efforts to urine. The chewing of the cud ceases. In a few hours after, they are seized with a shivering, their

eyes become dull and watery, a tough snivel issues from the mouth and nose, they lie down and die quietly, or are more or less convulsed. In this extremity they stretch their heads out frequently, pant for breath, fetch long sighs, and sometimes too they cough. These symptoms often come on so rapidly that the creatures die before they have been seen, many bullocks have dropped down dead under the yoke. A violent shivering is always fatal. It sometimes happens that tumours appear on the surface of the body. These tumours are flabby, yield only a thick reddish sanies. If a suppuration comes on all does well. The tumours which show themselves on the breast of a horse are the most dangerous and certain, those that are found in that part corresponding to the dewlap in a bullock, the creature whilst dying or when dead bleeds at the mouth or nose, or fundament, and sometimes at all three together. Most of the drenches hitherto given have seemed to hasten death. This epidemic disease has so great a resemblance with what we call in man a putrid, malignant, purple and pestilential fever that I do not scruple to give it these names in other animals. So much is it of the same stamp, that I met with three men in the country on whom the anthrax appeared.

The cattle never appeared fatter than they are this year (1763), and the disease has seemed chiefly to attack the finest and plumpest. At post-mortem no external mark, blood not coagulated but in a dissolved state. Lungs, tongue, mouth, œsophagus sound, abomasum mucous membrane peeled off. Spleen gangrenous spots. Post-mortem in a horse. Swelling of neck and breast. He stunk. The tumour in the neck appeared under the skin all macerated and drenched in a mucilaginous lymph. The flesh all around very moist and livid." The carcase of a sheep is thus described: "A swelling of the throat as in a horse. The rest of the body was sound within and without; the intestines emptied; the spleen was swelled and stuffed with black blood." Five other sheep, "no swellings of neck and throat."

In 1836 Youatt, probably without an extensive practical experience, published his work on "Cattle, their Breeds, Management and Diseases." This we are bound to take, at least as a reflection of the knowledge then existent. At page 457 under diseases of the spleen in sheep we find "Inflammation of the spleen and hæmorrhage from it or exudation through its coats is not an uncommon disease. In those that die of inflammatory fever, with which a high degree of intestinal inflammation is connected, or that perish in consequence of inflammation of the peritoneum, it is not unusual to find an effusion of a deep blood coloured fluid in the abdomen. This has been almost uniformly attributed to one or the other of these diseases in proportion as they have been observed to prevail; but the occasional seat of the disease the spleen and which is found most especially to have suffered, is too frequently overlooked. So it is in cattle. A beast in high condition or placed in too luxurant pasture, is suddenly taken ill, he staggers, his respiration becomes laborious, his mouth is covered with foam, he stands with his head stretched out, labouring for breath, he moans, blood escapes from the nostrils or the anus; the disease runs its course in a few hours, and the animal staggers and dies. On opening him the vessels beneath the skin are gorged with blood, but the spleen is most of all affected and disorganised, it is augmented in size, softened, its peritoneal coat torn, and blood rushes or oozes without any visible rupture.

In such a malady the skill of the practitioner can be of little avail. Had the peculiar determination of disease to the spleen been discovered it could not have been arrested; and all that can be obtained is a lesson of wisdom, a caution to adopt a more equable and less forcing system of feeding, and the avoidance of all these causes of general inflammation in which the weakest organ sufferers most, and by its disorganisation causes, or at all events hastens death."

It is curious how some of these views have kept their hold on professional and laymen to the present day, especially as to the high feeding.

From a report in *The Veterinarian* for 1862 we find that the disease was then generally so far differentiated as to bear a name of its own "Splenic Apoplexy." On page 515 Professor Simonds states that he "hesitated not to express his belief that it was a want of water which induced a diseased condition of the blood in this instance of extensive fatality said to arise from splenic apoplexy." In the same article the Professor speaks of dogs and pigs dying from eating the flesh of affected animals. Notwithstanding these observations the contagious nature of some diseases had not at this time made a deep impression on the minds of English veterinary surgeons. Professor Simond's report to the Royal Agricultural Society on some extensive outbreaks in this year concludes "I would express the hope that the causes of this fatal outbreak may yet be made evident by the co-operation of the chemist, the botanist, and the animal physiologist, so as to lead to the adoption of effectual preventive measures." Professor Buckman, the botanist, and Dr. Voelcker, the chemist, investigated the outbreaks of splenic apoplexy in co-operation with Prof. Simonds. The last named certainly proved himself superior to his co-operators, for while naturally the botanist declares in his summary "the basis of the mischief is poor herbage." The chemist "did not feel the least surprised that animals supplied with such water (as he had analysed) had become the subjects of serious disease." The animal physiologist, however, manifests his honest doubt in his expressions of hope as to what good the future might bring forth.

In *The Veterinarian* of 1864, under the head of "Splenic Apoplexy" there is a very long account by Mr. Ernes, M.R.C.V.S., of the researches of Davaine. Here we find reference to the contagiousness of the disease, an enumeration of the species of animals susceptible, the fact that rats are not susceptible, a morphological description of the bacillus anthracis, of its existence and development in the living animal before death, of the arrest of development in the carcase after death, and its destruction by the putrefactive process, of the resisting power of spores, and many other matters concerning the disease which were sufficient for much practical work and which now stand well the test of scientific investigation.

It appears to us now very strange that the contagiousness of the disease should have made so little impression—that it should have been so long overlooked or disregarded. Armatage, editing "Clater's Cattle Doctor," in 1870, draws attention to the contagious nature of anthrax, to the dangers to dogs, pigs, etc. from eating flesh of affected animals, and to men from skinning carcases and dressing hides. From this date at least, the fact seems to have been generally recognised.

I have purposely dwelt on this aspect of the subject in an endeavour to show that anthrax *is not a new disease.* I regard this important, because unless we recognise the fact that it has had an abiding existence here, we may possibly pay an exclusive regard to foreign sources and overlooked dangers always at hand. I think we have, in the early records, ample evidence of the existence of anthrax in Great Britain. There can be no doubt that it is sometimes introduced from abroad. It is, however, very difficult to make any calculations as to its relative prevalence at given periods, but if we carefully compare the older English veterinary records with those of the present day, I think we shall find it comparatively as much referred to in the former as in the latter. In attempting to form an opinion on this point it is necessary to remember the chaos as to diseases of cattle

which prevailed 40 or 50 years since, when the practice lay almost exclusively in the hands of the most ignorant farriers and quacks. When animals dying suddenly were said to be "struck" with this, that or the other, and attracted no attention beyond that of the owner. When cattle diseases began to be written about many of the rapidly fatal were jumbled together. Animals died of inflammation, inflammatory fever, murrian, stroke of blood, mysterious poison, etc. There is little reason to suppose that any contagious diseases corresponding to these have become extinct, and we naturally ask ourselves where are the cases of inflammatory fever, inflammation, etc., and on me at least, for reasons referred to is forced the conclusion that anthrax is responsible for some. Occasionally post-mortem examinations were made and the condition of the spleen, etc, marked. In *The Veterinarian* for 1843 there is recorded a "Horrible case of Splenitis." A clear account of symptoms preceding a sudden death, size of spleen, pitch-like blood, and no other lesions except blood-stained serous membranes, as convincing as if the record were headed "a case of anthrax."

Now scientific discovery followed by legal enactments has directed special attention to a well differentiated disease. Doubtless, from want of knowledge, the victims of other diseases have been accredited to anthrax, and official returns mark an increase of cases. For instance, there would appear some reason for believing that last year many cases of "vegetable poisoning" were returned as anthrax, while by some "black quarter" is still regarded as anthrax or "anthracoid" a term it would, I think, be well to discontinue.

We have, however, now attained that point when all are agreed that the disease follows the entrance of the bacillus anthracis or its spores, and I propose now to direct your attention to some points of practical importance in connection with the microbe.

Professor Penberthy described the bacillus, its recognition, mode of growth, and emphasized the following points, that during life of its host probably only bacilli were formed in the body, that these were destroyed by putrefaction, that as the septic process advanced from the interior from the intestines, which always contained putrefactive organisms, and provided other conditions favourable to the process, the external parts of the carcase contained anthrax bacilli after the destruction of those which were in the internal parts, that on gaining access to free oxygen spores were formed, which the putrefaction process did not destroy, but which lived for indefinite periods outside the body, and on regaining entrance to the system of the healthy animal, induced the disease. The unopened carcase which has thoroughly putrified, then, is a source of little danger, while blood which has escaped before putrefaction is highly dangerous. Probably, however, if the blood is in very thin layers and dessication immediately occurs, as must frequently be the case, the organisms are killed and it becomes inert.

In Great Britain the ox and sheep are most commonly the subjects of anthrax; next come the pig and horse, dog, cat. Ferrets, mice, rabbits, guinea-pigs, are easily affected, fowls seldom naturally contract the disease, and on account of their high temperature are said to enjoy a degree of immunity.

Amongst our patients, infection probably most frequently takes place by entrance of spores, and notwithstanding recent contrary statements there is evidence which goes to prove that both spores and bacilli may enter by invasion of lymphatics and unbroken mucous membranes, as well as though wounds and abrasions.

Man is also liable to attack; and this in Great Britain is most frequently from inoculation, when a local condition "Malignant Pustule" is established, or from the inhalation of spores inducing "Wool-Sorters' Disease," so called from the fact that workers in a certain part of the process of wool manufactures are most liable to it. All susceptible animals are liable to different forms of anthrax, determined to a great extent by the mode or place of entrance of the virus. When the virus enters through an external wound or abrasion and there is primary a local lesion the term local anthrax, malignant pustule, or carbuncle is applied to it. According to the seat of the local lesion, sometimes special names are given, *i.e.*, gloss-anthrax when the tongue is so affected; probably this is often a misnomer, and gloss-anthrax really black quarter. The disease following ingestion of the virus is called *internal, intestinal anthrax* or often *splenic apoplexy*. That following inhalation of the spores *pulmonary anthrax*. The time which elapses from the entrance of the virus to the first appreciable symptom (elevation of temperature) in most of our patients varies from 24 to 60 hours; the average, I think, less than 40. The effect of the virus will to some extent depend on the number of spores and bacilli entering the blood stream at once, on the virulence of the virus, and the individual or class susceptibility of the subject.

The effect of the bacillus in the blood is to de-oxygenate it, to render it wholly or imperfectly uncoagulable, black, and tarry, the production of ptomaines, albumoses, etc. In the tissues it sets up an inflammation, whose product is of a peculiar citron coloured gelatinous looking material. In man at the seat of inoculation there is a necrosis, the dead tissue becoming black (hence the name anthrax) and inflammation and infiltration of the surrounding tissues. It is stated that in "malignant pustule" of man the lesion may exist for days without bacilli being demonstrable in the general blood stream. The effects of the disease on the animal may be attributed to alterations of the blood itself, to the special product of the bacillus, ptomaines, blocking of capillaries, and sometimes to swellings.

Anthrax must be regard as a fatal disease, but I think it a great mistake to look on it as absolutely so. There are no means of exactly determining the proportion of deaths of infected animals, but there is, reason for supposing that this varies considerably. Sheep would appear to be nearly always mortally affected, though further observation is necessary before coming to a conclusion. I think it is not so fatal as black quarter. In the human subject, where surgical treatment is adopted there is a large proportion of recoveries. In different outbreaks amongst cattle I have observed a considerable number of favourable terminations; in several when the thermometer registered temperatures from 106 to 108.5.

As a rule, the number of animals dying in an outbreak is not large, an average of about 3 being that observed in the Government statistics of this country. When large numbers are affected together the virus is probably brought to the animals in food as in a cart contaminated by a carcase, or by direct transference from the diseased. One instance came under my own observation when 32 animals succumbed probably by bleeding first an affected animal, and then the rest of the herd.

The lesions of anthrax are varied in the different species of animal probably depending on the habit and anatomical character of the species. In all animals dying of anthrax, however, certain characters are observable, there is early evidence of putrefaction, and the bacilli in the blood. In cattle and sheep usually a few hours after death there are evidences of putrefaction which commences and is most advanced in the abdominal viscera. We thus find the abdomen much distended, the anus protruded, and often blood is noticed escaping from it. Bloody spume is often seen about the nostrils and mouth, white parts are of a dark colour, indicating venous congestion. The blood is dark and tarry and shows little tendency to coagulate;

if examined soon after death, it is found to contain anthrax bacilli and excess of white corpuscles. Internally the most marked and generally obtaining feature is the engorgement of the spleen, which frequently assumes an immense size. Sometimes in cattle its weight reaches 60 lbs. In extreme distension the pulp is broken down, occasionally its capsule is ruptured and the abdominal cavity contains a considerable quantity of blood. It is important to remember, that the spleen does not always reach these large proportions, though in most cases, if not in all, there will be some enlargement of the spleen, of which the blood is dark and tarry in appearance. On making an incision into the organ, which is in a more or less diffluent condition, the dark blood flows into the incision. If a piece of spleen is cut off blood flows from it. If putrefaction has not far advanced the bacillus anthracis is found here. As putrefaction progresses the anthrax bacilli become less and less, and in their stead we have putrefaction organisms. So that in some instances we may find both bacillus anthracis and putrefactive organisms. If a slide is mounted with blood in this condition, without any preparation of drying or staining, we notice moving and non-moving bacilli, the former being putrefactive, the latter probably those of anthrax. With a little experience, one soon becomes able to form a decided opinion without the aid of the microscope, nevertheless it is often necessary. In the intestines there may be evidence of inflammation and blood effusion, more or less intense. Sometimes there is much infiltration of the coats of the bowel with the gelatiniform material described before. The mesenteric lymphatic glands are enlarged, and usually dark from vascular engorgement. Occasionally there are blood markings in various parts of the carcase, especially in kidneys and heart and collections of jelly-like nature, this is most common about the throat.

In the horse gelatinous exudation about the throat and neck is more common than in cattle. (Loodianah Disease India.)

In the *pig* the throat lesion is most frequent, they probably nearly always contract the disease by eating parts of affected carcases. The amount of this material if often very large, the lymphatic glands are engorged with blood and inflammatory products. In both horse and pig the other lesions described as occuring in cattle are in varying degree noticeable. In pigs Crookshank often found ulceration of the tonsils, and the spleen not much affected. In dogs there is a collection of more or less gelatinform material about the throat.

After inoculation of mice, rabbits and guinea-pigs there may be found in those cases which have not died very soon, some gelatiniform material at the seat of inoculation, this is not observable, or only in very small amount, in those cases which terminate rapidly, otherwise the lesions are those of swollen spleen and hæmorrhagic markings, usually not very great.

The foregoing are the typical lesions found on making general autopsy, but I think we shall all agree, that the more rarely we make such the more consistently shall we act with our knowledge of the whole subject and our duties as conservators of animal and human health. I would however here like to say that my personal experience certainly does not coincide with descriptions often given by writers on this subject; often the spleen being the only organ or part markedly affected. There is, too, a tendency for venous engorgement, but gross lesions other than that of the spleen are frequently wanting.

The symptoms of anthrax are, I fear, often regarded as of little practical importance. It is usually said that the V.S. is called to see an animal, which is dead before he arrives, and we have come to regard our function as simply that of making a post-mortem, and declaring the existence or non-existence of disease. I allow, that often the practitioner does find his patient dead on arrival, but I think under ordinary conditions it is not uncommon for him to be called, after no long interval to find a similar state of affairs, for which he was as unprepared as his client. In connection with the clinical aspect of anthrax I think two assumptions have conduced to this. These assumptions, which I believe unwarranted depend on the view that anthrax is always fatal, and that there are no early signs of the disease. That both are wrong my experience has amply proved. In the first place, I have known many animals recover; and in the second I have found, with an animal in apparent health the temperature very high, sometime before death. It cannot be doubted that in this country in the majority of instances we are called to the case of an animal which has been observed to die suddenly or to have been found dead. Occasionally however there is time for the veterinary surgeon to see affected animals alive. This may occur under two conditions, the one in which an animal has been noticed by owner or attendant to be unwell before his arrival; the other comes under his observation on inspecting a herd of whose number one or more have previously died.

During the incubation of the disease, from 30 to 40 hours after reception of the virus there is little to be noticed saving a rise of temperature usually ranging from 104 to 108 F. Rigors and muscular twitching are often present, restlessness, excitement are noticed in some instances, usually depression is evident. The appetite is occasionally maintained within a few hours of death. The respiratory acts are generally excessive and sometimes in cattle associated with grunting. These may be noticed in all manifeststions of anthrax, but other symptoms arise in relation to the parts specially affected. Swelling of the throat, etc., in pigs and horses is the rule and sometimes in dogs. In affections of the spleen and intestines the extremities are cold, colicky pains are sometimes manifested, and blood and mucus which contain bacilli are passed by anus, nostrils and mouth. The urine may also contain blood and the bacillus. Symptoms like those of cerebral apoplexy and convulsions may be predominant. Sheep sometimes leap into the air, fall and exercise convulsive movements with their limbs. The visible mucous membranes manifest the deoxygenated condition of the blood, and are said to often show signs of hæmorrhage. I have rarely observed these latter. I am, however, disposed to the view thats without a history of existence of the disease or microscopic examination of the excreta of the living, or the carcase of the dead, we have no means of certainly diagnosing anthrax. The examination of blood taken during life has not proved satisfactory, the bacilli in many cases have not been found in the superficial vessels within two or three hours of death.

The differential diagnosis of the disease is, however, an important matter, and in order to make perfectly sure it is necessary to demonstrate the micro-organism. We have referred to the characteristics of the bacillus. Those of malignant œdema black quarter are easily distinguised in simple slide. Anthrax is a contagious disease easily communicated to other small animals, and by inoculation is thus easily distinguished from mineral or vegetable poisoning. Though in the majority of cases of splenic apoplexy the gross changes at post-mortem will convince the experienced practitioner, when any doubt exists the question must be settled by microscopic examination, culture or inoculation experiment.

In dealing with anthrax the veterinary surgeon is not only concerned with the affected but with the healthy, with the present existence of the disease and its prevention in future. His first case will probably involve post-mortem examination. It is unnecessary here to say this entails consideration for his person, and the use of measures for preventing that spread of the virus. It is of

primary importance to use all means to discover the source of the virus, a task often very tedious and unsuccessful. When we realise how easy it is for a micro organism, such as the bacillus or spore of anthrax—which latter lives for indefinite periods outside the body of the affected animal, to be conveyed to healthy animals, we must be convinced of the difficulties which surround this part of the subject. Corn, cake, hay, grass, green-crops, malt, water, flies, dogs, birds, earthworms, attendants, horses—in fact anything having substance may serve as a medium. We may, however, occasionally be able to trace the poison to a pasture, a shed, or pond, a certain article of diet. It will always be well to investigate a case so as to discover a possible connection with any special diet or situation, and under any circumstances when the origin is not discovered to try a complete change of diet and situation. The difficulties here are not easily overcome. If a pasture is contaminated, it is often impossible to determine the exact spot from which the virus is derived, and as all herbivorous animals are susceptible, the task of dealing with the field is almost hopeless. Old graves may be searched for and fenced off, but frequently their situation cannot be found. This contamination of soil proves to the practitioner a source of great difficulty in giving advice to clients. The ploughing of old pastures is often impracticable, and associated with it is always the danger arising from the chance of bringing up spores lying beneath the surface. I have, however, known the adoption of this means successful in rendering notorious pastures harmless.

In this dilemma we now naturally ask ourselves can the animals of the farm be protected so as to render their grazing on such pastures safe. The exponents of protective inoculation in foreigh countries answer in the affirmative. About 12 years since Pasteur introduced a system which appears from statistics to have had a wonderful effect in reducing the losses from anthrax in France and elsewhere. The number of animals inoculated may be counted by millions, and the reported decrease of mortality is immense. My own experience has certainly been very favourable. It is important to remember that this vaccin contains the living anthrax bacilli, though it is claimed that they are attenuated by cultivation under special circumstances of temperature etc. From Pasteur's public experiments, my own, and the statistics referred to, there is little doubt in my mind that a degree of immunity is conferred. This is stated to last about 12 months. In considering this we must take a practical view. Under natural conditions it is not likely that an animal will ingest large quantities of anthrax bacilli or spores at a given time, so that we must be careful in drawing conclusions from laboratory experiments in which cultures containing immense numbers of bacilli and spores have been introduced at once into the systems of vaccinated animals in order to test the effects of vaccination. The great apparent objections to this plan of inoculation depends on the fact that in certain cases, which happily have been very rare, several deaths, especially of sheep, have followed very soon after the inoculation, and appear to result from it. This erratic behaviour of the vaccine has not been satisfactorily explained, though it may have some connection with recrudescence of the virus, owing to carelessness of the veterinary surgeon or in the manufacture. I have used Pasteur's vaccine on several hundreds of cattle and horses without harmful results ; but I think it advisable before undertaking the operation to inform the clients, and state fairly the case.

There are further means of preventing recurrence of anthrax which depend on our knowledge of the life history of the bacillus and spore, and their relation to the carcase, etc. Post-mortem examination involving opening the animal should only be carried out when absolutely necessary. This can very rarely be the case. It is important to remember that putrefaction will soon render the carcase inert, and if it can be buried intact where it is found, after the excretion and discharges have been subjected to disinfection, as by crude carbolic acid, vitriol, etc., no danger need be feared. There is however no law to prevent a post-mortem examination. and should this be decided on, the greatest care should be observed and precaution given to anyone engaged in the operation. The hands and arms of any servant employed to skin or cut up the carcase should be examined, and if any chaps, cuts or abrasions exist such an one should not be allowed to assist at the operation. If it is found necessary to cart or drag the carcase to a suitable spot for burial, means should be adopted to prevent the escape of blood, etc., from the mouth, nostrils or anus; carts, tools, etc., should be immediately disinfected. Burning the carcase would of course be effectual in killing the virus if the carcase could be placed bodily into a crematorium, but in the great majority of cases it would be necessary to cut it up before burning, a plan not free from danger of contaminating the situation. It would prove a very useful rule that no carcase of an animal dying suddenly and mysteriously should be opened except by a veterinary surgeon. It is my opinion that the improper treatment of such carcases is liable for the existence of this disease in an enzootic form.

If we are not able to satisfy ourselves as to diagnosis without microscopic research, and this is often necessary, blood for examination should be taken from superficial vessels, and care taken that no more is spilt than is necessary for an examination. We have seen that putrefaction is most likely to be fullest advanced and consequently the bacilli fewer in the internal organs. Should it be desired to send any part for expert examination, the part suggested by Prof. M'Fadyean—an ear or hoof—would be quite sufficient, and probably more satisfactory than portions of the spleen, which is early affected by putrefaction change. Any spilt blood should then be disinfected with strong carbolic or sulphuric acid, also blood passed by the anus, and spume from mouth and nostrils. If death occurred indoors, manure, straw, etc., should be burnt and the place disinfected. The carcase then must be buried according to the law. The lime which is ordered probably may be useful in destroying any virus which may escape from the animal, but otherwise it is unnecessary, and if it retards the process of putrefactive cannot be said to be of much value as regards the infected carcase. This being done there is little to be feared from that cadaver.

Hay is regarded by some to be less likely to convey the virus than grass fed off. Only one instance have I been able to apparently trace ill effect to hay, though I have had under observation several fields grazing on which was fatal to the cattle.

Cakes are often accused of causing anthrax. I do not know of any positive evidence on this point, but if any one would demonstrate the presence of the bacillus anthracis in cake, it would be decisive for that case. I have known several instances in which, when cake has been stopped that the disease has ceased, but on this account we may not attach the blame to the cake, for the common experience is that in the majority of cases only a few animals succumb, and that when more than one dies, death often follows closely on each other. Possible contamination from woollen, bone manufactories may not be lost sight of.

Slaughter of in contact animals is only called for in most exceptional instances. The advisability of slaughtering animals is not so clear to me as it would appear to be to some. A writer has recently stated that all animals having a temperature of 105 should be dealt with as infected animals and destroyed. If it were fact that every case of anthrax were fatal, or even that during the

attack on animal was liable to spread the disease, as in pleuro-pneumonia, cattle plague, or foot and mouth disease, this would probably be the correct course to adopt. But we know such is not the case.

The Professor narrated the circumstances of an outbreak occurring six years ago in which, 4 animals, including a bull worth about £500 and a steer which took a prize at the following Smithfield Market, recovered after indicating temperatures of from 106 to 108. The utmost precautions were taken as to destruction of litter, disinfection, and as a matter of fact no animal on this farm has been affected since. To have destroyed these evidently infected animals would have entailed serious loss and have done no good.

Having satisfied ourselves of the existence of anthrax and considered the mode of infection, our next care will be to separate the healthy from the diseased. This can only be done by aid of the thermometer. It is important that, as some will probably succumb and that all will discharge the virus by fæces, urine or other excreta, they should be kept in some place that can be disinfected. Such agents as alcohol, quinine, carbolic acid, iodine, perchloride of iron, mineral acids, small doses of corrosive sublimate may be administered internally. Should there be any evidence of an external seat of inoculation this may be excised, or incised and cauterized with the hot iron or strong antiseptics, as pure carbolic acid. Hyposulphits of soda is much estimated by some but I have been unable to observe its curative effect. Bleeding should be eschewed. Spontaneous recovery is by no means rare.

It is not necessary to speak of the danger to man of flesh from animals effected with anthrax.

I stated at the commencement of this paper that it would be difficult to say anything new to this Association concerning anthrax. I think there has been a disposition to regard it as a comparatively new disease, altogether fatal, impossible to diagnose during life, and after death marked by generally distributed extravasations, and that an abrasion or wound is essential to the entrance of the virus. Some have thought it necessary to slaughter in contact as well as infected animals. My views on these and other points have perhaps differed from those of others who have recently expressed their opinions. I now conclude my remarks as I commenced them—in anticipation of gaining from expression of your experiences.

Discussion.

The President: I am sure we are all extremely indebted to Professor Penberthy for the very able address he has given us on anthrax. We have had a good many cases of this disease in the different Ridings and I thought it would be interesting to all of us if Prof. Penberthy would address us upon this subject. This disease is of special importance to stock-owners. You will observe that the Professor repeats the advice we have previously heard, that the best way to treat an animal which has died from anthrax is to let the carcase alone and not open it. Personally, I cannot speak with any great degree of knowledge of anthrax in this country. I have had many cases of it in India where it is known by the name of Loodianah Disease. The high temperature has been referred to, the colicky pains, and swollen necks. I have noticed a discharge from the nostrils, and in some cases from the eyes. It is of a more lasting character and in some cases continues some length of time. It was always a mystery to the veterinary officers how the animals had become inoculated. Sometimes we were of opinion that small sandgalls being brought from the flies settling on these animals from the neighbouring compounds of native cattle. I was most interested in the attempt to prove that it can come by ingestion. I was struck with what the Professor said with regard to colic and anthrax, when he spoke of these deep citron-purple coloured swellings in the intestines. We found those in cases of horses that died from colic in India. You may remember in my presidential address I called attention to the waste of the ratepayers money by the destruction of animals which had been in contact with those which had died from anthrax. I said at the time it was totally unnecessary to destroy such animals. I suppose that we are such a wealthy nation that we can go on destroying these good animals. I must thank the Professor for coming here as a personal friend of mine, and also on your behalf for the long, exhaustive, and interesting and scientific work he has placed before us to-day.

Mr. Cooke: There is only one thing I should like to say with regard to this paper. The Professor sticks to the analogy between the symptoms of animals afflicted with anthrax and those fed on a certain line. I believe I have remarked it before at these meetings. Sometime ago I attended some animals under twelve months old showing symptoms of anthrax. The veterinary surgeon in attendance was suspicious it was anthrax, and each and every symptom pointed to the conclusion that he was right. On making further inquiries I found the animals had been fed on cotton cake. I don't think it is any uncommon thing for animals to show these symptoms if fed on this material. I don't think it is a suitable food for young stock.

Mr. Carter expressed the pleasure it had given him to listen to this paper and said in his experience of anthrax he had always found a swelling in the throat.

Mr. Collins: Supposing a country practitioner was called out to a case without knowing the history, and when he arrived he found it dead. What would his mode of procedure be? Having no suspicion, as to making a microscopic examination or a post mortem.

Professor Penberthy:—Cut off one ear and put it in your pocket and examine the blood microscopically.

Mr. Somers:—We have had in Leeds within the past week a case of wool-sorters' disease for the first time. The man had been sorting Australian wool. He died in three days.

Mr. Thompson:—I had an outbreak at a farm some few days ago. In the first case there was high temperature, close upon 107, swelling about the throat, and great difficulty in breathing; oozing of blood from the nostrils; dark coloured fæces tinged with blood. She died three or four days after I saw her. The following morning I noticed another going wrong, she was dead within four hours. The third was about the same as the first, and there was nothing special about the other three. None of the lot lived above 8 hours, the average being about 4½ to 5 hours. There had been no fresh stock brought on the premises for eight or nine months. No fresh feeding stuff or fodder, in fact nothing fresh except some artificial manure last May, and I have reasons for thinking some of the materials it contained consisted of animal refuse imported from Egypt, and this might have caused the disease. A post-mortem examination was made in one case and it showed the clearest indications of anthrax. Two animals had very high temperature and they recovered without any treatment whatever. The animals were eating nothing but grass

Professor Penberthy:—It seems to me there is very little to reply to. Mr. Thompson tells you that two of his cases recovered; that is about my general experience. Anthrax is not an absolutely fatal disease. With regard to manure I have known instances where broken bones have caused laceration which has been the means of the inoculation of the subject. The duration of the disease he tells us was about 4 hours. Possibly had he been called in two days before he would have found the temperature of the animals that died very high. The

case of wool sorters' disease which has been referred to is very interesting, especially as it is the first case which has occurred in Leeds. With regard to Mr. Cooke's remarks I am disposed to the view that cotton cake occasionally carries with it some poison. It is not unusual to find nine month old cattle dying from eating cotton cake. I was very glad to hear Mr. Mason's remarks about anthrax in India. It is possible that the horses had got inoculated with spores.

The proceedings then terminated.

ROYAL VETERINARY COLLEGE MEDICAL ASSOCIATION.

The 200th General Meeting of the Association was held in the New Theatre of the College on Wednesday November 21st, at 6 o'clock p.m. Mr. Dunstan was in the chair. There was a fair attendence of members.

Mr. Parker read a paper on "Castration," which was highly interesting, and which provoked the attentive appreciation of those present. The salient points of the essay were—the reasons for castration, age and preparation of the animal to be operated on, the various methods of operating, and the instruments used in the standing and recumbent position.

The advantages of the "Huish-Blake" castrator over all others.

The various methods of operating on abnormal subjects.

The castration of the smaller animals, the spaying of the female, and the caponing of fowls.

The treatment of the animal after castration, and the complications likely to accrue from the operation. The various instruments used in the different methods were exhibited.

A discussion followed in which the following gentlemen took part. Messrs. Boyce, Dowell, Houston, Heyes, Taylor, Standley, Elmes, Reeks, Burt, W. Robertson, M.R.C.V.S., Spooner-Hart, M.R.C.V.S., Johnson, and Millar.

Votes of thanks to the Essayist and Chairman brought the proceedings to a termination.

WALTER BURT, *Assist. Sec.*

LONDON COUNTY COUNCIL.

GLANDERS OR FARCY ORDER OF 1894.

This Order requires every person having, or having had, in his possession or under his charge, any animal affected with Glanders or Farcy, to at once give notice thereof to the police. Any such person failing to give notice is liable to a penalty of £20.

On the police receiving notice, the animal affected will be examined by one of the Council's Veterinary Inspectors. Should it prove to be glandered, all necessary steps for its slaughter and for the removal and destruction of the carcase will be taken by and at the expense of the Council.

The Council is prepared to pay the sum of two pounds compensation in respect of every glandered or farcied horse as to which proper notice has been given.

PRECAUTIONS AGAINST GLANDERS.

General.

1. Glanders is a contagious disease, and may be communicated to a healthy animal by contact with a diseased animal; by infected water or food; or by contact with a manger, utensil, or other thing infected by a diseased animal.

2. Infected horses may give the disease to others long before they show any outward signs of it themselves.

3. A glandered horse may sometimes be kept alive and even at work for a time, during which, although no disease may be visible, it is a source of contagion.

4. The continuance of glanders is largely due to want of promptitute in detecting disease, to delay in killing diseased horses, and in taking proper precautions against infection. It is mainly by the vigilance of owners that the disease can be stamped out.

5. Horses weeded out from studs should not be sold until it has been ascertained that they are free from disease. The present practice of selling weeded-out horses at auction, without such precaution, is a fruitful means of spreading glanders.

6. Healthy studs may be kept free from glanders by the adoption of proper precautions against infection.

Suppression of Glanders.

7. When glanders is already in a stud it can be got rid of only by killing all horses infected, and by thoroughly cleansing and disinfecting the premises.

8. The presence of disease in a stud may be ascertained by frequent careful inspections. The injection of mallein by a veterinary surgeon skilled in the work might be adopted in doubtful cases.

9. Directly disease is detected the horse should, as far as practicable, be separated from other horses; notice should be given to Police; any place where the horse has been kept should be thoroughly cleansed and disinfected; and all clothing, utensils, and appliances used for it should be destroyed or thoroughly disinfected.

10. Horses that have been in contact with diseased horses, either by standing next them in a stable, working in harness with them, or otherwise, should as far as possible be isolated from other horses, and kept under close observation for a time.

11. When a horse has any discharge from the nostrils, or swelling of the glands under the jaws, it should be at once isolated, and its stall. etc., should be cleansed and disinfected.

12. Horse-keepers should be instructed to give immediate notice to their employers of any ailment, however slight, in the horses under their charge.

Precautions against Glanders.

13. Drivers and horse-keepers should frequently be impressed with the danger of letting their horses come into contact with other horses.

14. Drivers should be warned against leaving their horses more than is absolutely necessary when in the streets, as during their absence their horses may come into contact with glandered horses.

15. Drivers should also be warned against allowing their horses to drink at water-troughs at which other horses can drink.

16. Whenever possible, pails should be sent out with vehicles; and watering horses, except by means of pails, and with water drawn from a stand-pipe or tap should be prohibited.

17. It is important to keep horses under good sanitary conditions, and especially important to well ventilate all stables, both near the roof and near the floor.

Symptoms of the disease.

1. Chronic cough.
2. Thin unthrifty appearance with rapid wasting.
3. Excessive staling.
4. Enlargement of the gland (or "jug") under the jaw.
5. Slight sticky discharge from the nose.
6. An ulcerated patch on the membrane which divides the nostrils.

*Article 26 of the Glanders or Farcy Order o 1894 provides that existing regulations shall remain in force and be deemed to have been made under that Order.

7. Thickened leg.
8. Corded veins.
9. Small lumps (or "buds") on the hide, which afterwards burst and discharge sticky matter.

CAUTION.—All who have anything to do with glandered or farcied animals should bear in mind the following facts :—

1. That the disease can be communicated to man by discharge from the nostrils or other parts of a diseased animal or carcase.
2. That the disease in man is almost always fatal.
3. That it is specially dangerous for any person with scratches or sores on the hands or face, to handle diseased horses or carcases.
4. That by care and strict attention to cleanliness the danger of inoculation is avoidable.

ALFRED SPENCER,
PUBLIC CONTROL DEPARTMENT. *Chief Officer.*
21 Whitehall Place, S.W.
November, 1894.

REGULATIONS AS TO GLANDERS OR FARCY.

In pursuance of Articles 12, 13 and 23 of the Glanders or Farcy Order of 1892*, the London County Council, being the Local Authority for the County of London (except the City of London and the liberties thereof), hereby makes the following regulations :—

(*a*) As to the movement and marking of animals diseased with, or suspected of, glanders or farcy ; and as to the removal of fodder, litter, etc.
(*b*) As to cleansing and disinfection in glanders or farcy.
(*c*) As to prohibiting or regulating the removal of any carcase, or for securing the destruction of the same.

1. These Regulations shall take effect and be in force on and after the 1st day of April, 1893.

As to the movement and marking of animals diseased with or suspected of, glanders or farcy ; and as to the removal of fodder, litter, &c.

2. A diseased animal shall not be moved from the stall, standing or other place where it may be when first known to be diseased, except under the charge and direction of one of the Council's inspectors, and then only for isolation or slaughter.

3. A diseased animal shall not be moved out of any stable, building. or other place, except for slaughter, and then only in pursuance of a licence granted by one of the Council's inspectors, and in an enclosed vehicle provided by the Council.

4. A diseased animal shall be conspicuously marked by or under the direction of one of the Council's inspectors with the word "glandered" and with a number, and it shall be unlawful for any person to remove or in any way obliterate such mark.

5. A suspected animal shall not be moved from any stall, standing, stable, building or other place, except for isolation or slaughter, and then only under the charge and direction of one of the Council's inspectors or in pursuance of a license granted by him.

6. A suspected animal shall be conspicuously marked by or under the direction of one of the Council's inspectors with the words "suspected of glanders," and with a number, and it shall be unlawful for any person to remove or in any way obliterate such mark.

7. An animal which has been in the same stable, building, field, or other place in which glanders or farcy exists, or otherwise in contact with any diseased or suspected animal, or which has been otherwise exposed to the infection of glanders or farcy, shall not be moved out of any stable, building, field or other place during the time any diseased animal remains in such stable, building, field other place ; nor until the regulations of the Council as to cleansing and disinfection have been complied with by the owner, lessee, or occupier thereof.

8. Fodder, little or any other thing that has been in contact with, or used for or about any diseased or suspected animal, shall not be taken out of any stable, building, field or other place until it has been disinfected to the satisfaction of one of the Council's inspectors, and until a license for the removal thereof has been granted by the Council pursuant to Article 18 of the Glanders or Farcy Order of 1892.

As to cleansing and disinfection in glanders or farcy.

9. Every place in which a diseased or suspected animal has been kept, shall immediately after the removal of such animal or the carcase thereof, be swept out, and all litter, dung or other thing that has been in contact with or used about any such animal shall be disinfected by being thoroughly mixed with quicklime,

10. Every part of such place, and every manger, feeding trough, and other thing used for or about any diseased or suspected animal, or with which such animal or its droppings, or any discharge from the mouth or nostrils thereof may have come in contact, shall be as far as practicable thoroughly washed with water, and scrubbed or scoured, and shall also be disinfected by being thoroughly washed with hot water containing at least one pint of carbolic acid to each gallon of water.

11. Every place in which a diseased or suspected animal has been kept, shall within 48 hours of the time when such place has been cleansed and disinfected as provided in regulations 9 and 10, be washed over with limewash made immediately before use of freshly burnt lime and water, and containing in each gallon of limewash at least four ounces of chloride of lime or half a pint of carbolic acid.

12. The cleansing and disinfection of places, utensils, and other things shall be executed by and at the expense of the owner, lessee, or occupier of the premises.

13. A vehicle in which a diseased or suspected animal or carcase has been conveyed shall immediately after use be cleansed and disinfected in the following manner—

(*a*) The interior of such vehicle shall be effectually cleansed by the application of steam to all parts thereof.
(*b*) The interior of such vehicle shall then be thoroughly washed with water containing at least one pint of carbolic acid in every gallon.

As to prohibiting or regulating the removal of any carcase, or for securing the destruction of the same.

14. The carcase of a diseased animal shall not be moved except under a license granted by one of the Council's inspectors, and in accordance with the conditions of such license.

15. Every part of the carcase of every diseased animal shall be destroyed, by exposure to a high temperature, under the supervision of an officer appointed by the Council.

16. Throughout these regulations "animal" means a horse, ass, or mule ; "glanders" includes farcy ; "diseased" means diseased with glanders or farcy ; "suspected animal" means any animal declared by one of the Council's Veterinary Inspectors to be suspected of glanders ; "Council" means the London County Council. All other words have the same meaning as in the Glanders or Farcy Order of 1892.

17. All regulations relative to glanders or farcy made by the Local Authority of the County of London, and hitherto in force therein, are hereby revoked.

Dated this 17th day of March, 1893, at the County Hall, Spring Gardens, S.W.

By order, H. DE LA HOOKE,
Clerk of the Council.

Any person guilty of an offence against the foregoing Regulations is liable to a penalty of twenty pounds.

REVIEW.

REPORT OF THE VETERINARY DEPARTMENT OF THE BOARD OF AGRICULTURE FOR 1893 (SECOND NOTICE.)

Following Professor Brown's report comes that by the Chief Inspector—Mr. Cope. It refers to the diseases which have existed among animals in foreign countries and which have been discovered in foreign animals landed during the year.

During the whole year prohibition to land animals in this country from the continent of Europe was maintained, with only one exception in favour of Norway. Pleuro-pneumonia, foot-and-mouth disease, anthrax, sheep-scab, rabies and glanders existed in France, Austria, Belgium and Germany; foot-and-mouth disease prevailed in Denmark, Italy, The Netherlands, Portugal, Roumania, Switzerland, Spain. Sheep-pox was reported in Austria-Hungary, France, Roumania and Bulgaria. Cattle-plague exists in Russia. Anthrax and Tuberculosis are found everywhere. From South-America sheep-scab was found in many imported animals. Among cattle landed from the United States and Canada we are told the Board discovered pleuro-pneumonia, but this is quite a matter of opinion. It is remarkable that the great pig-breeding countries of Roumania and Servia should be free from swine-fever.

From this report certain conclusions may be deduced according to the interests affected. The officials of the Board of Agriculture would find their labours and anxieties less if total prohibition of the importation of live-stock were enforced. The veterinary profession would become an active and lucrative calling if we returned to free trade in cattle and sheep. The owners of stock have a decidedly strong argument in favour of the total prohibition of live-stock from abroad, and it cannot well be said that the consumer would suffer. We are now within a single step of total prohibition and the injury to trade by adopting the extreme measure would be very slight if any. When we say total prohibition, we mean against entry into the country; we see no need to protect the landing of live-stock for immediate slaughter at any port where proper provisions are enforced against the spread of contagion, even if the animals come from an infected country—of course cattle-plague excepted, as it is too easily carried by men and things from place to place. Foot-and-mouth disease is brought here periodically without importing affected animals, and we have no restrictions which can guard against these outbreaks. From such places as Newcastle, Hull and Deptford, where well arranged lairs and slaughterhouses exist, there need be no fear of any contagion escaping even if diseased animals were imported.

The need for foreign store-stock here is by no means proved. The dry summer of 1893 caused our home stock to decrease, but such a condition is not likely to soon arise again, and unless some such catastrophe happened again we ought to be able to produce and keep all necessary supplies without importing. This question will have to be determined one way or the other soon, and the progressive dead meat trade makes it easier.

A third report is signed by Mr. Duguid and is devoted to a critical survey of the diseases which have existed amongst our home stock. Pleuro-pneumonia comes first, and the returns show that it is nearly extinct. Compare these two years—

1873—Infected counties, 72; cattle attacked, 6,787.
1893 „ „ 4; „ „ 30.

Last year there were nine different outbreaks—in Forfar 2, in York 1, in London and the neighbourhood 6, so that we may reduce these to only 3 centres.

In three of the nine outbreaks the discovery of the disease was made by veterinary surgeons who had seen the lungs after death, The V.S. worked in unison with the Board in connection with pleuro-pneumonia because he was decently treated. These three outbreaks might have spread far and near if antagonism had then prevailed. The feeling is not now the same, and swine-fever outbreaks will not be reported by veterinary practitioners. They will be strictly left to the owner until the Board alters its behaviour to the profession.

Foot-and-mouth disease twice made its appearance in 1893. One outbreak took place in a cowshed at Barnsbury, North London, and a second on a farm at Guestling in East Sussex. Neither spread. The first outbreak was slaughtered out, the other succumbed to strict isolation. Nothing definite was ever discovered as to the origin of these outbreaks.

Swine-fever was taken over by the Board of Agriculture on the 1st November, and an extra batch of travelling inspectors employed to stamp the disease out. The central authority entered on its work with a light heart—much in the same spirit as did the French in 1870 when they started *à Berlin*. The central authority very soon reached their Sedan. Swine-fever did not decrease; and then in feverish haste orders were altered, local authorities blamed, and excuses of all kinds made to cover the failure. When next year's report appears we shall know more of the sad story, but the last two months of 1893 are not creditable to the Board.

Anthrax shows a considerable increase of reported cases, but probably a good deal of the increase is due to the fact of returns being more corectly made. The most remarkable feature of this disease is its wide distribution—only 5 English counties were free. Although cattle are much more frequently attacked than other animals, sheep, swine and horses do not escape. Of the 1300 animals attacked 833 were cattle, 313 swine, 108 sheep, and 46 horses.

Rabies showed an extension both in area and cases attacked. In 1892 there were 40 cases, in 1893 there were 93. The chief centres of infection were Lancashire and Lanarkshire.

Glanders last year showed a decrease in the number of animals attacked, but an increase in the number of counties infected. In 1892 there were 3001 cases, in 1893 only 2133 of which 1900 occurred in London and the surrounding counties. Seventy

cases were reported from Scotland, nearly all from Lanark. Wales returned only 4 cases.

The use of Mallein is referred to, but official caution goes no further than acknowledging it as a valuable aid to diagnosis.

Sheep-scab prevailed last year more widely than in any of the preceding five years. The Assistant Inspector complains of the carelessness of stock-owners, and points out that the disease might be eradicated without the slaughter of a single sheep and at little expense. Someone is responsible for this negligence, and the Board of Agriculture have powers to compel local authorities to do their duty under the Acts.

This disease like all others requires someone in each county to look after it. If all counties were compelled to appoint, as Northumberland does, a County Veterinary Inspector, there would then always be a responsible person to blame or praise. No doubt every County could not find a Clement Stephenson, but most of them might follow closely on the success which has attended Northumberland under its veterinary adviser.

Another report in the book is that by the Chief Travelling Inspector but we must reserve our notice of it till next week.

EXTRACTS AND NOTES.

THE TREATMENT OF DIPHTHERIA WITH ANTITOXIN SERUM.

Dr. John A. Turner, Medical Officer of Health to the combined districts of Leicester and Rutland, contributes to *The Lancet* an article on this subject, founded upon his experience in Paris. From this we take the following interesting particulars.

Preparation of the Antitoxin Serum at the Pasteur Institute.

Toxin is prepared in flat-bottom glass vessels with lateral tubes containing a sterilised, peptonised broth; into this broth are introduced recent and active diphtheria bacilli. The contents of the vessels are then heated up to 37C., a current of air being passed through water into the vessel. This process is continued for about a month. The toxin is then filtered off through a Pasteur-Chamberland filter into sterilised air-tight bottles corked with sterilised cotton wool. Toxin thus prepared is injected under the skin of the neck of the horse, just in front of the shoulder, in quantities varying from 1 to 30 c.c., two or three times a week for three months, at the end of which time the animal is regarded as immune. I saw several horses in various stages of immunity, seemingly none the worse for the injection of the toxin. There are at present eighty horses at the disposal of the Institute.

From the jugular vein of a horse thus immunised is drawn off a variable quantity of blood, which is passed directly into sterilised glass jars by means of indiarubber tubes. These jars are air-tight and protected from the light. From them the antitoxic serum is decanted into small bottles containing 20 c.c., or enough for a first injection. It is these small bottles that are supplied to the general practitioner. The antitoxin serum at the hospitals is kept in bottles with two glass tubes passing through an air-tight stopper. On one of these tubes is fixed a piece of indiarubber tubing, which is secured by a clamp; the other glass tube is stopped with sterilised cotton wool. This indiarubber tubing is for connecting the mouth of the syringe—later to be used in injecting—when filling it with serum from the bottle. This syringe, known as "Collins's," is made of glass and metal, and is capable of containing 20 c.c. The indiarubber tubing is attached to the mouth of the syringe and the needle fixed to the end of the tubing, thus serving to prevent the needle being broken if the child is restive.

Injection of Antitoxin Serum at the Hospitals.

Before using the syringe it is sterilised inside and outside by boiling in water, and is tested to see that it acts, and that the needle is clear. It is then filled with antitoxic serum and is ready for use. The lower part of the surface of the abdomen and flank is sponged with a solution of perchloride of mercury (1 in 1000), a piece of skin is pinched up with the finger and thumb of the left hand (duly asepticised), and the needle, held with the right hand at the base where it joins the tubing, is then gently but firmly passed into the skin. The injection is then made, care having been taken only to fill the syringe with the amount of antitoxin serum required, and the needle having been withdrawn the part is covered with properly prepared cotton-wool. The slight œdema resulting disappears in from fifteen to thirty minutes. No reaction follows, and up to the present no injurious effects whatever have been produced, and the point of puncture is hardly perceptible the next day. After using the apparatus it is taken to pieces, again placed in boiling water, and well cleansed.

Results from the Injection.

Antitoxin serum is held to be both preventive and curative. For example, if in a family of children where there is a case of diphtheria all the other children were to be injected (those under ten years of age with 5 c.c. and those over ten 10 c.c.), it is stated that the spread of the disease among the children would be checked; and that should a child have already contracted the disease its course would be modified. But at present, with regard to the preventive properties of antitoxic serum, sufficiently numerous observations have not been made. They should soon become more general, as the injection of this small dose is harmless and no risk is run, while the inconvenience caused is transitory.

When a case of diphtheria is suspected the treatment begins as follows: 20 c.c. of antitoxin serum are injected at once, or if the patient is over fifteen years of age 30 or 40 c.c., two injections in the latter case being made, one on each side.

SWINE FEVER.

Slateford, Nov. 19, 1894.

SIR,—It may interest some of your readers to know that swine fever is still—and has been all along—"spreading in the piggeries in the western suburbs of Edinburgh." For four months the disease has lingered in these premises, the Board of Agriculture being seemingly powerless to arrest its progress. The first outbreak was reported on 29th June, and the last a few days ago. Fourteen piggeries have been cleared out, and close upon 600 pigs destroyed.

Outbreak after outbreak has occurred, and each in turn has been met by the Board in its leisurely characteristic fashion. The disease has extended step by step from piggery to piggery, and no very strong nor stringent measures have been taken to repress it. Diseased subjects have been allowed to live for days, and occasionally for more than a week, and the carcases of a large number of them deposited in a trench not a couple of

yards from the turnpike. No swine fever circle nor area worth mentioning has been declared. Up to three weeks ago several owners in close proximity were allowed to do very much as they pleased—one pig dealer buying in and sending out his pigs in ordinary course, with the disease within a few yards of his place—no one interfering. It would almost appear that only when there are no more pigs to kill can swine fever be stamped out by the present Board of Agriculture.

During the past ten years swine fever made its appearance in this same cluster of piggeries on three occasions—in 1885, 1888, and 1891. In the early part of 1891, unfortunately, unrecognised and neglected by two young and inexperienced inspectors, the disease extended and spread very much as recently, lingering about the premises for months, and in addition, by the sale and distribution of young pigs, spreading contagion broadcast over other parts of the county. When, however, prompt and right measures were adopted, as in 1885 and 1888, no difficulty whatever was experienced by our county Local Authority in doing away with every trace of disease in a few weeks, only three or four of the piggeries—in 1888 only one—becoming affected; and it is reasonable to infer that had the recent outbreaks been dealt with by the County Council instead of the Board of Agriculture, the suppression and eradication of the disease would have been effected in one-fourth of the time and at one-fifth of the expense.

Several county Local Authorities in the South of England, we learn, have risen against the administration of the Board of Agriculture, and have requested and obtained leave to resume the working of the Swine Fever Order in their respective districts; alleging, apparently with truth, that many of the officers of the Board are but indifferently qualified for the duties which, without due preparation, they have undertaken to perform. Be this as it may, the education of these gentlemen as barristers and accountants, naval and military experts, and suchlike, can scarcely qualify them for the recognition and eradication of contagious disease among such a low order of animals as pigs. The proceedings during the past four months at this western suburban district amply proves this.

It is all very well for Major Tennant, the head of the Department, to affirm that "the class of man you want is a man of untiring energy, of good business habits, of some social position, one who will appreciate the responsibilities of the work and devote his whole time and thoughts to it, and, above all, a man with no special knowledge in any one direction" and for Mr. Gardner later on to assure the House of Commons "that no work requiring veterinary knowledge and science had devolved on any inspector of the Board not possessing such knowledge." The absence of "special knowledge," and more especially of "veterinary knowledge and science," on the part of the officials of the Board of Agriculture is, in my opinion, the main cause of the continuance and propagation of swine fever for four months in these suburban piggeries.

What man possessing any "special or veterinary knowledge" would on the first appearance of the fever leave twenty-six diseased subjects for a week to die off in the very centre of a cluster of four hundred pigs? What inspector with any pretensions to fitness for his office would cause nearly one hundred diseased carcases to be wheeled along the public road in barrow loads and buried in a pit within a short distance of six or eight large piggeries? What veterinary surgeon, knowing well the common course and results of the disease, would leave even one affected pig for a few days in contact with others? The fact that such proceedings receive the approbation of these Board of Agriculture officials surely goes far to prove their incapacity.

The difficulty and danger of placing the administration of the Swine Fever Order in the hands of the Local Authorities consists—as everyone knows—in their want of uniformity of action; one Local Authority, as that of Mid-Lothian in 1891, spending £1000 and making strenuous efforts to get rid of the disease; while its neighbour in Lanarkshire of that time was quietly leaving the matter almost without consideration. For this reason nearly all the witnesses before the Departmental Committee of 1893 concurred in advising that the eradication of swine fever, as of pleuro-pneumonia, be trusted to one "central body—the Board of Agriculture—with compensation from Imperial funds." Few of those interested, however, were, I make bold to say, prepared for such an exhibition of this Board's handiwork as has been lately witnessed "in the piggeries in the western suburbs of Edinburgh." And it is much to be regretted that such blundering and ignorance—for one cannot call it less—should be protected by Government sanction and salved over by red tape and unlimited funds at command.—I am, etc.

C. CUNNINGHAM.

From *The Scotsman*.

VETERINARY SURGEONS AND THEIR RESPONSIBILITIES.

At the Lambeth Police Court yesterday Mr. Hopkins had before him a case of considerable interest to veterinary surgeons. Mr. George R. James, a veterinary surgeon, of Manor Road, South Norwood, was summoned by Inspector Marsh, on behalf of the Royal Society for the Prevention of Cruelty to Animals, for causing a horse to be ill-treated.

Mr. Colam, barrister, appeared to support the summons, and Mr. Poole, solicitor, defended.

Mr. Colam said the case arose out of one which recently came before the Court. The defendant then got into the box and said he took the entire responsibility of the animal being worked, that it was worked under his authority, and that he was responsible. Upon that statement his worship said that if that were so he could not hold the defendants who were then before the Court liable, and dismissed the summonses. In spite of the proceedings on that occasion the society found that the animal was still being worked, and the present defendant was seen by some of the society's officers. He was asked whether the horse was still being worked, and he replied that it was, and that it would be, in spite of the society. Under those circumstances the society, being advised that this animal was quite unfit for work, felt bound to take these proceedings.

Evidence in support of the summons was given by Inspectors Marsh and Rogers, who spoke as to some conversation they had with the defendant.

Mr. Israel Print, veterinary surgeon, who saw the horse on the 17th of October—the day on which it was stopped by the society's officer—said it was very old and in poor condition. It was weak on both fore limbs and was lame on the off fore.

Maurice G. Byerley, a Fellow of the College of Veterinary Surgeons, who saw the horse on the 27th of October, gave corroborative evidence, and said he considered the animal quite unfit for work.

Professor Pritchard, an ex-president of the College of Veterinary Surgeons, who saw the horse on the same day as the last witness, expressed the opinion that to work it would cause it pain.

By his Worship.—The horse was not fit for any kind of work.

No witnesses were called for the defence, but Mr. Poole submitted that no case had been made out against the defendant. Differences of opinion existed not only

amongst the veterinary surgeons, but amongst medical men, amongst lawyers, and amongst all trades and professions. The defendant held the opinion that this horse was fit for work, and, as a matter of fact, it was at work that day.

Mr. Hopkins remarked that he must decide against the defendant upon the veterinary testimony. When horses were brought to that court in a state which would lead one to believe they ought not to be worked, the people who worked them frequently called a veterinary surgeon, and the veterinary surgeon constantly said, "This horse is worked by my authority." He (Mr. Hopkins) did not know what other magistrates did, but he never felt able to convict persons of cruelty when a veterinary surgeon took that responsibility upon himself. Mr. James had taken that responsibility, and, in spite of the suggestion by the society that this was a horse which should not be worked, it was, by his advice, still at work. The society had brought overwhelming veterinary testimony against him, and the defendant would have to pay a penalty of 20s. and £3 3s. costs.—*Advertiser.*

[This person is not a Member of the Royal College of Veterinary Surgeons.—ED.]

TUBERCULOUS LYMPHANGITIS.

At the Clinical Society of London on October 12th, Mr. Eve read notes of a case of Tuberculous Lymphangitis following a sore on the finger. The patient, a woman aged forty-seven, was first seen by him at the London Hospital in February 1890. On the dorsum of the left index-finger, just above the distal joint, was a superficial sinus surrounded by flabby granulations. At the base of the finger, over the metacarpo-phalangeal joint, was a superficial cold abscess. Several larger abscesses were distributed in linear series along the dorsum of the forearm and the inner surface of the lower third of the upper arm in the course of the lymphatics. There were also a few firmer peri-lymphatic nodules which had not broken down. The axillary lymphatic glands were much enlarged. There was evidence neither of phthisis nor of other tuberculous lesion. The disease commenced with what she termed a "whitlow" on the left index-finger two months before she came under observation. She could not remember having injured the finger, and no phthisical patient had resided in the same house. It appeared probable that an ordinary whitlow had been inoculated, perhaps in washing a handkerchief soiled with tuberculous sputum. For the purpose of estal lishing the diagnosis guinea-pigs were inoculated with pus from the abscesses, with positive results. The patient was admitted to the hospital under one of his (Mr. Eve's) senior colleagues, and the larger abscesses were opened and scraped. In February, 1891, she returned with a fresh crop of abscesses, the first crop having cicatrised and healed. Her general health continued to be good. She declined any further operation and soon disappeared. In January, 1893, she had a sinus over the dorsum of the forearm, extending deeply between the muscles. There was also some fresh superficial ulcers on the hand and forearm. These were scraped. Examination of her chest revealed no evidences of tuberculosis. Since then he had been unable to trace her. The condition of the patient was illustrated by coloured drawings and photographs. A similar case described by Tuffier was quoted, in which the patient succumbed to general tuberculosis. A fatal result by generalisation or by phthisis was the usual termination of such cases. Tuberculous lymphangitis almost invariably followed superficial lesions, and usually the cutaneous inoculation of tubercle. In one case there was an anatomical tubercle, in another a warty tubercle on the back of the hand, and in three other cases the patients were women who developed nodules on the fingers whilst nursing their phthisical husbands. An allusion was made to the various forms of tuberculous lymphangitis described by Goupal. Stress was laid on the necessity of early diagnosis, so that the disease might be extirpated as soon as possible by erasion of the abscesses and removal of the nearest chain of lymphatic glands. One variety, described as "lymphangite, lymphangiectasique," presented the appearances of elephantiasis.—The President remarked that six or seven years ago an instructive account of tuberculosis following inoculation was contributed by a surgeon who had accidentally inoculated his own hand.

THE APHRODISIAC EFFECT OF MORPHINE ON THE FOWL.

To the Editors of THE LANCET.

SIRS,—I hoped to have seen some explanation why morphine is non-poisonous to fowls. A day or two after my letter appeared in *The Lancet* of Sept. 22nd I was informed by a credible eye-witness of the manner in which a cock bird deported himself. Some sixteen hours after he had taken about one scruple of the morphine (he having devoured one third of the sop) he became highly aphrodisiac; his attention to the hens was so excessive that they became frightened and huddled themselves together, apparently to resist his further advances. On being isolated he purchased himself upon a large stone, which he did not leave until he had rubbed off every feather from the inside of his thighs. It appears to me remarkable that morphine, so many hours after having been taken, should have produced such an effect upon this gallus domesticus. We know that the primary effect of opinion on some of the mammalia is in some degree aphrodisiac, probably owing to the combination of its alkaloids. I question whether morphine alone would produce a similar effect.—I am, sirs, yours truly,

October 5th, 1894. E. W.

SHEEP DISEASES.

It will be remembered that within the past few months Mr. Archibald Park, M.R.C.V.S., was engaged by one of the largest sheepowners in the North to investigate the cause of mortality amongst sheep. Mr. Park went, and after his return to Hobart made cultures of the organisms which he found in the blood of the animals that were diseased. These organisms were supposed to cause anthrax, and it was feared that the disease had become established here. Mr. Park satisfied himself that it was not anthrax, but was obliged to admit that the organisms were equally deadly, and recommended that investigation be carried further with a view to finding a safe and sure vaccine with which sheep might be inoculated. On his way to Queensland last week, he interviewed Dr. Momont, M. Pasteur's representative in Sydney, who examined the cultures and slides, and confirmed Mr. Park's view. Dr. Momont says,—"It is not anthrax," and has expressed his willingness to cultivate a vaccine from the blood, and by the time Mr. Park returns from Queensland he hopes to have a reliable vaccine ready for testing. Mr. Park, in a private letter to a friend in Hobart, says,—"How fortunate we did not introduce anthrax vaccine on chance! This is undoubtedly an instance which proves that a bacteriologist is required in Tasmania, whose services might be availed of by the medical faculty as well. Probably you have no idea of the saving of human life if a more scientific knowledge of disease were diffused." This disease, whatever it may be, ought to receive immediate attention at the hands of the authorities.—*Hobart Mercury.*

Smithfield Club Show.

This year the Smithfield Club Show will open at the Agricultural Hall on December 10 and will close on the 14th, the president for the year being the Earl of Ellesmere. The entries of cattle and sheep are exceedingly good. The cattle entry (339) is the largest the club has ever had, and the sheep entry (221) has only been very slightly exceeded on one previous occasion.

CORRESPONDENCE.

STUDENTS AT VETERINARY COLLEGES

SIR,

I take it that neither Professor Penberthy nor myself has the time or wish for a paper controversy on the above subject; what we have written has been from conviction, and solely in the interest of the profession to which we belong. The Professor in his answer to me has endeavoured to hide the main question under a very heavy and liberal coat of butter which he has thickly plastered over a few of his personal friends, but I think, sir, you and your readers will easily see through that, though you may be somewhat nauseated in doing so. I will not allude to or say anything of living practitioners, for in the act of praising them one might appear fulsome, but I will put it to the Professor whether he thinks the new regulations will turn out better men than Professor Spooner, the Fields, both father and son, or than the late Mr. Gregory, of Bideford: these had only a two years course of study, one examination and about twenty-five guineas in fees to pay. Since their day with the abolition of the cow doctor our work has become rougher in character. The old qualified practitioners did scarcely any obstetric work, and were called in only as experts to see that nothing went wrong with the castrating of valuable colts, but they had nothing to do with securing them or the actual operation. At least this was the custom in my neighbourhood. I do not say that there is anything degrading, although there is a great deal of rough and tumble in our work. As an interesting science it cannot be beaten, at the same time I am bound to confess to you, sir, that doctoring pampered pet dogs is to me neither elevating nor manly; a pack of hounds it is always my delight to see, either in the fields or in the kennel, but as for these pets there is not one woman in a hundred will talk common sense about them. The Professor has accidentally alighted on an article in a back number of *The Record* in which a very happy and Utopian state of things is described, and I for one hail with gladness a time when even common people take so much interest in scientific matters; and I agree that for the veterinary student there must be progress also; but it must be of such a character as the public demands and which will not be prohibitive. Professor Penberthy truly points out that there is high pressure in the Law and in the Church; but to qualify for either of these callings is mere child's play compared with that of obtaining the diploma of the Royal College of Veterinary Surgeons, both as regards cost and the necessary application of brain power. If the profession will turn to *The Veterinary Journal* 1888, page 230, he will see my opinions are not newly conceived, nor have they altered since that date. You see, Mr. Editor, that except for the Army we have no plums to give away in our profession, and even the Army, Mr. Kudyard Ripling, does not recommend. (I wish, sir, you could induce Mr. Ripling to write a few more articles for *The Record*, it would brighten it up a little.)

A thousand a year was lost to us when Professor Brown resigned his appointment at the Board of Agriculture, and pretty well twenty comfortable appointments which should properly belong to us were handed over to laymen. If we had had the slightest interest at Westminster they would have gone to qualified veterinary surgeons. "Assistant" very properly complained to you of the poor pittance allotted to such as he—about one-third of the salary of an ordinary village schoolmaster. The Professor will bear me out in this statement, I feel sure, for owing to his great and kindly interest in the students of the R.V.C. he has had a greater experience in placing out assistants than any man in England. "Assistant" thinks it is due to overcrowding; I do not agree with him. Our fees are so small that by the time a horse is kept for an assistant, and his travelling expenses paid, unless he can be had for a small sum it will not pay to keep one at all. As a rule a doctor pays his dispenser and accountant a larger amount annually. The fact is that frequently enough a surgeon receives more pounds for operations and such like than we do pence. It would be suicidal for us to charge more than our work is worth, or we should soon have no employment at all. Professor Penberthy very truly says it is difficult to procure a good medical practice for a thousand pounds, when as you are well aware one or two hundreds will buy a very fair veterinary practice: this is a good guage to the value of the two kinds of work. As to dining out; that is all very well for those who like that sort of thing, but if it is to continue a man who has a house of his own must be in a position to invite his friends back again to the same class of hospitality which he has received, or he will soon find it would have been far better if he had not gone out at all. Again, it will not be compatible, if his friends are of any standing, to send in a bill for shoeing or a circular that he undertakes such groom's work as the breaking of young horses. Mr. Penberthy also points out our liability to bodily injuries in practising our calling; the hazard we run is no fancy; if he will consult his "Parkes" he will see that the average length of life of a veterinary surgeon is shorter than that of almost any other calling. I cannot help but think that, added to these numerous drawbacks, a matric. equal to the Royal College of Surgeons (not very high it is true, but the College of Preceptors said at the time the alteration was talked over that is was higher than the average veterinary student could pass) and four years in London with its attendant expenses will deter many useful young men, farmers' sons and such like, who are sadly wanted in country places, from joining our ranks.—Yours faithfully,

WM. PENHALE.

Barnstaple, Nov. 27th, 1894.

COMMUNICATIONS, BOOKS, AND PAPERS RECEIVED:—Prof. Penberthy, Surg.-Major Poole, Messrs. J. H. Pritchard, H. J. Dawes, J. Yates, W. Penhale, E. W. Hoare (2), A. Johns, W. B. Nelder, S. Locke.

Annual Report Lahore Vety. Coll., *Transactions 30th Annual Meeting United States V.M.A.*, *Medical Review* (St. Louis) Nov. 3, 10), *The Scotsman*.

Original articles and reports should be written on one side only of the paper, and authenticated by the names and addresses of the writers, not necessarily for publication.

We shall be obliged by early intelligence of all matters worth bringing under the notice of the profession, and thankful to any friends who may send us cuttings from local papers, containing facts of interest.

Communications for the Editor to be addressed 20 Fulham Road, S.W.